DOCUMENT RESUME

ED 291 802 TM 011 116

AUTHOR Rossman, Gretchen B.; And Others
TITLE Pathways through High School: Translating the Effects of New Graduation Requirements.
INSTITUTION Research for Better Schools, Inc., Philadelphia, Pa.
SPONS AGENCY Maryland State Dept. of Education, Baltimore.; Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Jul 87
NOTE 59p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Academic Records; Administrator Attitudes; Core Curriculum; Credits; Educational Change; *Graduation Requirements; *High Schools; Required Courses; *Secondary Education; State Legislation; State Standards; Student Attitudes; Teacher Attitudes
IDENTIFIERS Maryland

ABSTRACT

The first phase of a study of the effects of new high school graduation requirements in Maryland was conducted in 1986. Interviews were conducted with 182 administrators, teachers, and students about their perspectives on new requirements instituted in 1985. Transcript records were analyzed for 249 students from 5 high schools. Interview data did not suggest that state initiatives had a large impact on local schools. An important finding of transcript analysis was that the program of studies had a significant impact on student choices. Specific recommendations for the Maryland State Department of Education staff and local school personnel focused on better communication and dissemination of information about the new requirements and in-depth examinations of school organization, course content, and approaches instead of concentration on numbers of credits and kinds of courses taken. Specific credit requirement recommendations were made. Appendices discuss the coding of transcript data and research design for future study. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED291802

ERIC

PATHWAYS THROUGH HIGH SCHOOL

Translating the Effects of New Graduation Requirements

Gretchen B. Rossman
University of Massachusetts

Bruce L. Wilson
Research for Better Schools

Joseph J. D'Amico
Research for Better Schools

Nadine T. Fernandez
Research for Better Schools

July 1987

TM 011 116

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

ELLEN NEWCOMBE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The preparation of this paper was supported by funds from the U.S. Department of Education, Office of Educational Research and Improvement (OERI) and resources from the Maryland State Department of Education (MSDE). The opinions expressed do not necessarily reflect the position or policy of OERI or MSDE, and no official endorsement should be inferred.

BEST COPY AVAILABLE

TABLE OF CONTENTS

	Page
Executive Summary	2
Introduction	5
Maryland's Graduation Requirements	9
Research Methods	14
Interview Data Results	17
Dropouts, Minorities and the Foreign Born	17
Level of Information	17
Effects on Departments	21
Effects on Special Programs	25
The Certificate of Merit Option	28
Aspirations of Students	31
Student Transcript Results	35
Background Characteristics	35
Course and Credit Histories	37
Factors Associated with Course and Credit Histories	44
Conclusions	47
References	50
Appendix A	52
Appendix B	55

PATHWAYS THROUGH HIGH SCHOOL:
Translating the Effects of Maryland's
New Graduation Requirements

Executive Summary

Across the nation, state legislatures have responded to negative public opinion about the quality of education with legislation that moves beyond their traditional concern with school finance and funding. Many states have undertaken initiatives that directly affect the substance and quality of teaching and learning and are intended to modify and shape the educational enterprise within each state. Maryland's high school graduation requirements, instituted in 1985, are an important example of such legislation.

The Maryland State Department of Education (MSDE), working with Research for Better Schools, Inc. (RBS), has initiated a long-term study to track the effects of Maryland's graduation requirements on students, staffing patterns, school organization, and curriculum in five high schools in Maryland. The schools were selected to reflect the variation one finds in organizational characteristics like size, urbanicity, and racial composition among all Maryland high schools.

The first round of data, collected in the fall of 1986, represents practitioners' perspectives on the new requirements after they had been in effect for just over one year. Interviews were conducted with 182 administrators, teachers and students. Transcript records also were analyzed for 249 students. Results from the first phase of this study indicate that the new graduation requirements already are having some impact in the five Maryland high schools.

These results, despite their preliminary nature, suggest a set of recommendations which, in our opinion, should be brought to the attention of staff involved in implementation and technical assistance activities related to the new graduation requirements. Hopefully, these recommendations will prove useful both to Maryland State Department of Education staff and to local school staff as they enter their third year of implementation of Maryland's high school graduation requirements.

Interpretation and Implementation

1. RECOMMENDATION: MSDE should adjust its technical assistance and support of implementation to address local school context. They should make every effort to improve communications with locals and develop materials to assist that process.

   EXPLANATION: The extent of knowledge and degree of implementation of the new requirements varies from school to school along with the context (e.g. size, racial composition, urbanicity, organizational structure, etc.). For example, in the large urban system, communication about the new requirements from the central office to the local school was problematic. Direct contact between MSDE and local high schools could improve information dissemination. In another example (the small rural high school), students in regular and Certificate of Merit courses were rostered into the same classroom. Technical assistance from the state could be designed to help small, rural schools better handle this instructional situation.

2. RECOMMENDATION: Rather than focusing on just increasing the number of credits or the kinds of courses taken, we recommend that local high schools, supported by MSDE, undertake indepth examinations of school organization, course content, and instructional approaches as described by the full scope of the Maryland Commission on Secondary Education study (volumes 2-5).

   EXPLANATION: Many interviewed educators discussed the new graduation requirements solely in terms of numbers of credits and newly required courses. While this might be anticipated in the first year of implementation, the intent of the Maryland Commission on Secondary Education study reports goes well beyond this narrow focus.

3. RECOMMENDATION: We recommend close scrutiny of the intended and unintended effects of the new requirements, especially to determine potential adverse effects on at-risk youth. Furthermore, local systems need to develop, with the assistance of MSDE, their own systems for service delivery (like appropriate assistance to the at-risk population).

EXPLANATION: Many interviewees expressed concern that the new requirements would increase the chances that at-risk students would dropout of school, although they felt the functional tests would have more serious negative consequences. Transcript analysis suggests that a fairly large proportion of students may need additional help meeting the new requirements, specifically assistance with the third year of mathematics.

General Credit Requirements

4. RECOMMENDATION: We recommend that the local high schools carefully examine all third year mathematics courses, particularly in terms of their appropriateness for non-college-bound students, and implement the state's three year differentiated mathematics curriculum.

   EXPLANATION: Enrollments in third year mathematics courses will jump dramatically, perhaps by as much as 50 percent. Yet, at the time the study was conducted, little had been done at the local level to design mathematics courses for the additional enrollees who will not qualify for or are not interested in currently available courses (typically algebra or geometry).

5. RECOMMENDATION: We recommend an investigation of the local effects of the graduation requirements on vocational education centers. The focus of this investigation should be to ascertain how vocational education has been impacted, positively and negatively by the new graduation requirements. During this investigation particular attention should be paid to the fit between the curriculum and the technologically oriented occupations the students will be engaged in. Also, exploration should be made into ways that math and science courses that are directly relevant to vocational courses can be granted through vocational programs. Such an investigation should explore how, for example, math and science credits can be granted through a vocational program.

   EXPLANATION: The data from the study suggest that many of the traditional vocational education departments are encountering declining enrollments, while business and computer courses are flourishing.

6. RECOMMENDATION: We recommend that all departments should examine their program and course offerings to insure that they are consistent with the full intent and scope of the Maryland Commission of Secondary Education report recommendations (volumes two through five) and that students are fully aware of the content and purpose of these offerings.

   EXPLANATION: Student enrollments are high in departments that have aggressively marketed themselves to students; that is, in departments that have programs, courses and teachers that appeal to students and the that encourage students to enroll. These courses seem to embody more of the full intent of the requirements (as described in volumes two through five) and this has been one factor contributions to their success.

Certificates

7. RECOMMENDATION: We recommend that Certificate of Merit courses should be developed and offered in all subject areas--not just academic subjects--and that these courses be made available to all students--not just those students who typically enroll in advanced courses.

   EXPLANATION: The intent of the new graduation requirements bylaw was for courses across all subject areas to qualify as Certificate of Merit courses (e.g. advanced drafting in the vocational department). However, the Certificate of Merit is being very narrowly interpreted to apply only to academic subjects and college preparatory students.

8. RECOMMENDATION: We recommend that a clearer reiteration of the regulations governing the High School Certificate be given to all high school principals. These clarifications should underscore that the Certificate is only applicable to identified handicapped students.

   EXPLANATION: There is a great deal of confusion at the school level regarding whether the High School Certificate can be awarded to any student not meeting the graduation requirements. Many think it can.

Continuation of the Study

9. RECOMMENDATION: We recommend the continuation of the investigation of the effects of the high school reforms. This study should include a longitudinal component to discover more precisely the long-term effects of the Maryland graduation requirements. It should also pay particular attention to implementation of other aspects of the Maryland Commission of Secondary Education recommendations which have been incorporated into state bylaws.

   EXPLANATION: This investigation looks only at the first year of implementation of new state graduation requirements which do not fully take effect for two more years (with the class of 1989). Consequently, results are only preliminary and subject to change. In short, although informative with respect to early implementation, the study is too young to be conclusive.

Introduction

One perennial quest of educational policy makers is for a way to improve education, to make it more reflective of societal values and responsive to broad social trends. Often a balance is sought between coercive measures and persuasion--between legislated laws and regulations, and a set of incentives for participating in some new venture. Waves of reform initiatives buffet schools calling for higher test scores, better cognitive skills, increased

staff development, and stronger instructional leaders. One difficulty inherent in these reform efforts is the unclear and ambiguous connection between mandated or invitational change initiatives and some desired set of outcomes. This lack of clarity makes policy formulation problematic and suggests that a backward-mapping (Elmore, 1980) approach to the study of policy effects can inform that process.

This paper reports on the first round of data collection from a longitudinal study of high school reform in Maryland. Designed in collaboration with the Maryland State Department of Education staff, the study will provide a series of portraits of the effects of a new set of graduation requirements on five high schools in the state. This backward-mapping approach is intended to analyze a policy's effects at the level that policy is intended to shape or influence. For this study, that level is the school--more specifically, the student--that the new graduation requirements are intended to affect.

The intent of this longitudinal study is two-fold. First, the study will follow the implementation of this new policy as the process unfolds. Annual site visits to five high schools will be conducted to enable researchers to track the effects of the policy. Interviews will be conducted to ascertain how administrators, counselors, department heads, teachers, and students view the new policies and their impact. Second, portraits of students' pathways through each high school--their high school careers--will be generated from transcript data. So far, baseline data have been collected from a randomly selected sample of 249 graduates from the class of 1986 in the five high schools. Comparable data will be collected from a sample of the 1989 graduating class--the first cohort to be governed totally by the new requirements. These data will be analyzed and compared with the 1986 cohort

data in order to answer a fundamental research and policy question: Do the requirements make any difference in the pathways and school careers of high school students?

Opinions concerning the possible effects of stricter graduation requirements cover a range of possibilities. Those who favor more academic standards note that they may encourage students to remain in school, promote increased learning, expose students to new areas of knowledge, and generally increase the overall education level of the citizenry. Others, those who view stricter standards with dismay, present the opinion that non-academic students will be further disenfranchised from school, teachers' autonomy will be eroded, students' elective choices constrained, and a holistic view of students will be lost.

Some researchers (Resnick & Resnick, 1985; Serow, 1986) argue that, even if the proposed effects of new requirements were modest, there still would be little chance of achieving them. Historically, state initiated graduation reforms have little, if any, impact. State initiatives often are blunted or diverted as they trickle down to local education agencies (Elmore, 1980; Rossman, Corbett, & Dawson, 1986).

Still others predict that the most visible effects will be unintended or even unexpected. New, stricter graduation requirements have been seen as increasing the drop-out rate (Glatthorn, 1986; McDill, Natriello, & Pallas, 1986). Alternatively, one observer predicts fewer drop-outs as a result (Hamilton, 1986). Or they could mean large-scale, costly alterations in the school day and school year (Toch, 1984), and might have unintended curricular effects: for example, fewer courses offered, more basic--rather than accelerated--courses, and diminished curriculum articulation (Bickel, 1986). Finally, one observer noted (Cross, 1987), they could erode teacher morale even more than is presently the case.

Nationally, the major feature of graduation requirements reform has been to increase the required credits in certain core courses. In some states there are additional requirements governing community service, elective choices, or attendance options. The most dramatic feature of all states' legislation, however, is the increase in number of required credits.

Arthur Wise (1979) has described this phenomenon as "hyperrationalization", that is, the application of excessively rationalistic, bureaucratic procedures to something as complex as schooling. This process relies on simplistic criteria which focus on narrowly-measured or measurable outcomes to assess intangible but valued ideals. Generally, high school requirements seem to favor such an approach. More course work--because it can be measured--is taken as a proxy for more learning.

Adding these opinions together one can create quite a spectrum of potential effects: from enabling students to enjoy a productive life, through pushing them out of school, to no change at all. The Pathways study seeks to narrow the width of this spectrum somewhat by describing the results of a longitudinal study of the effects of newly instituted graduation requirements on students in five Maryland high schools. It will describe the effects of these requirements on:

- students: their curricular choices, their inclination to stay in school, their co-curricular participation, their out-of-school employment, and their post-high school plans.
- school staff: their instructional strategies, their administrative responsibilities, and their roles in the school organization.
- school organization and context: the length and division of the school day, rostering, and re-alignment of communication patterns and work place relationships.
- curriculum: the number and nature of course offerings, changes in special programs, changes in course or content sequencing, and changes in course materials.

This paper is a report of the first stages of the longitudinal study.

Maryland's Graduation Requirements

In 1982, the State Superintendent established the Maryland Commission on Secondary Education with the mission to examine critically the philosophy, principles, standards and programs which provide direction for the state's public high schools. The Commission prepared five reports that address the full range of services in high schools. These reports include:

- graduation requirements
- curriculum
- instruction/instructional support services
- student services and activities
- school administration/climate

The broad scope of this effort was to push the reform beyond a simple numbers game of counting the kind or number of credits taken. Rather, the Commission's High School Study was designed to encourage local systems to re-examine their entire programs.

The first of the Commission reports, Graduation Requirements, was enacted into law in June of 1985 with implementation to begin by September of that same year. The second, Curriculum, was similarly legislated in February, 1987. The Pathways study has focused on the initial implementation of the June, 1985 bylaw, mindful of the full scope of reform in all areas to follow. Future research is outlined in Appendix B to insure a complete picture of the implementation process.

Maryland's new requirements, effective in school year 1985-86[1] for the class of 1989 and subsequent classes, include changes in course requirements for the diploma, two additional certificates, elimination of credit toward graduation by examination, and stricter alternative enrollment choices. A

comparison of the new state requirements and the previous ones is provided in Table 1. The Maryland high school diploma stipulates one additional credit in mathematics as well as one credit in a fine arts course (visual arts, music, dance, and theatre) and one in a vocationally-oriented course.

The Maryland State Department of Education has created an acronym for the broad range of courses designed to satisfy the vocationally-oriented requirement: Computer, Home Economics, Industrial, Vocational, Education. The term used in the remainder of this text for these courses will be CHIVE. Local systems have the option of setting stricter requirements than those mandated by state legislation.

An additional unique feature of the requirements is the Certificate of Merit (CM) option. This option stipulates additional credits (one in a foreign language, a third credit in science), a minimal grade point average of 2.6, and the requirement that 12 of the 20 credits are from advanced level courses. What is unique about this option is that each department--not just the academic ones--must select and offer advanced courses that satisfy the CM guidelines. The local system has the responsibility of identifying advanced courses within the guidelines provided by the bylaws.

Changes have also been made in alternatives to the four-year enrollment requirement. Graduation in less than four years has been eliminated and job entry training no longer counts as an alternative to four-year enrollment.

---

[1]The bylaw that governs these new graduation requirements was passed by the State Board of Education in June 1985 with implementation to take effect by September of that same year. Given such a short timeline it is inevitable that some misunderstandings may occur during early stages of implementation.

TABLE 1: COMPARISON OF NEW AND OLD MARYLAND HIGH SCHOOL GRADUATION REQUIREMENTS

1. MARYLAND HIGH SCHOOL DIPLOMA

NEW	OLD	DIFFERENCE
Credit Requirements:		
English - 4 credits	English - 4 credits	Same
Science - 2 credits	Science - 2 credits	Same
Fine Arts - 1 credit	No credit specified	1 Fine Arts credit added.
Mathematics - 3 credits	Mathematics - 2 credits	1 Mathematics credit added.
Social Studies - 3 credits (1 U.S. History and 2 Unspecified)	Social Studies - 3 credits (1 U.S. History; 1 Contemporary Issues; 1 Unspecified)	Only U.S. History specified.
Physical Education - 1 credit	Physical Education - 1 credit OR 2 years physical activity	Physical activity option eliminated.
Computer studies or Home Economics or Industrial Arts or Technology Education or Vocational Education - 1 credit	No credit specified	1 credit in Computer Studies or Home Economics or Industrial Arts or Technology Education or Vocational Education added.
Electives - 5 credits	Electives - 8 credits	3 required credits added, thus reducing the number of elective credits.
Total Required Credits: 20 credits	20 credits	Same total credits, but 3 additional specified credits.
Senior Year Credits: 4 credits earned after the 11th grade	No specified credit requirement after 11th grade	Seniors must earn at least four credits during their senior year.
State Competency Tests: Functional Reading, Functional Mathematics, Citizenship Skills, Writing	Functional Reading	All four tests will be phased in for the class of 1989.

2. MARYLAND CERTIFICATES

NEW	OLD	DIFFERENCE
Certificate of Merit (In addition to the diploma) Effective: Class of 1989 Certificate for completion of a more challenging education program. Credit Requirements: English - 4 credits Science - 3 credits Fine Arts - 1 credit Mathematics - 3 credits Social Studies - 3 credits (1 U.S. History) Physical Education - 1 credit Computer Studies or Home Economics or Industrial Arts or Technology Education or Vocational Education - 1 credit Foreign Language (Level II or above) - 1 credit Electives - 3 credits Advanced Courses: 12 credits in advanced courses from the above listing Grade Point Average: at least 2.6 (on a 4.0 scale)	No provision	Provision is made for a certificate in addition to the diploma for graduates who meet certificate stipulations in the graduation requirements bylaw.

NEW	OLD	DIFFERENCE
Maryland High School Certificate (In lieu of the diploma) Effective: Class of 1986 Certificate for completion of a special education program for students who have been enrolled for at least four years beyond grade 8.	No provision	Provision is made for a certificate in lieu of the diploma for special education students who cannot meet the requirements for the diploma but meet the specified requirements on theIEP and in the graduation requirements bylaw.

3. OTHER PROVISIONS FOR EARNING CREDIT TOWARD GRADUATION

NEW	OLD	DIFFERENCE
Summer School	Summer School	Same
Evening School	Evening School	Same
Correspondence Courses	Correspondence Courses	Same
Tutoring	Tutoring	Same
Work Study Programs	Work Study Programs	Same
College Courses	College Courses	Same
	Examination	Credit by examination eliminated.

4. ALTERNATIVES TO FOUR-YEAR ENROLLMENT REQUIREMENT IN A PUBLIC HIGH SCHOOL

NEW	OLD	DIFFERENCE
Early College Admission Program	Early College Admission Program	Same
Early Admission to Vocational, Technical, or Other Post-Secondary School	Early Admission to Vocational, Technical, or Other Post Secondary School	Same
	Accelerated Twenty-Credit Program	Graduation in less than than four years eliminated.
	Job Entry Training Program	Job entry training eliminated as an alternative to four-year enrollment.
General Educational Development Testing Program	General Educational Development Testing Program	Same
Maryland Adult External High School Diploma Program	No provision	Maryland Adult External High School Diploma Program is referenced as an alternative approach to earning a diploma in the graduation requirements bylaw.

Research Methods

The data described here were collected as part of a first phase. The study itself incorporates two complementary data collection efforts: one gathering student transcript data; the other eliciting perceptions through interviewing. In this first year, these efforts have yielded very different types of data, albeit data providing a more complete picture of policy effects than could either one alone (see Rossman & Wilson, 1986, for a discussion of combining methods).

The five high schools were chosen because they are diverse and represent the full range of high schools Maryland's students might attend during their school careers. The student populations from these schools come from urban, suburban and rural settings and reflect a mix of social and ethnic groups. The size of the student population also varies markedly. In addition, the five sites represent the full range of economic wealth for the region and a diverse set of family socio-economic situations:

Maryland High School Field Sites[2]

1. Medford High School. Student population about 1,000. Medford is a suburban school. It has been recently reorganized and is recognized as having a strong academic program.

2. Redmond High School. Student population 1,500. Redmond is an urban school which has both a large minority and a large non-English speaking population. It also has a broad range of alternative programs.

3. Wolcott High School. Student population about 2,500. Wolcott is a large urban, comprehensive high school. It has both a large minority and a large ethnic population.

4. Riverview High School. Student population about 1,400. Riverview serves a large geographical area. In addition, a vocational-technical center, an elementary school, a middle school, and a special education center are all located in the complex.

5. Ashfield High School. Student population less than 500. Ashfield is a small rural school that offers a comprehensive program.

---

[2]Pseudonyms have been chosen for the five high schools.

The study design calls for the early collection of transcript data from students not affected by the new requirements--those in the graduating class of 1986 or earlier. These data have been used to develop "portraits" of the students' high school careers. Intended primarily as baseline data for future comparative purposes, the data are summarized here as a series of profiles of the class of 1986. After subsequent rounds of data collection, they will be compared with profiles of students completing high school under the new requirements.

Students in the present transcript analysis were selected randomly (fifty per high school). This strategy maximizes the sample size given limited financial and staff resources. In the smallest of the five sites all the graduates were selected. In the largest a sample was chosen that reflected the full spectrum of high school experiences. Only students who were in attendance at the school for all four years were selected. Data were gathered in thirteen categories:

- gender
- race
- family situation
- socio-economic status
- attendance
- course performance
- course descriptors
- program studies
- state competency test results
- grade point average
- co-curricular activities
- awards
- post high school plans

A complete discussion of the coding procedures for these variables is presented in Appendix A.

The second major data collection effort solicited perceptions of, judgments about, and reactions to the new requirements from those most affected: administrators, guidance counselors, department heads, teachers,

and ninth grade students at each of the five high schools. Representatives from these groups were selected for interviewing by a local school liaison (often the head of guidance) and a staff person from the Maryland State Department of Education who was familiar with the school. In all, a total of 182 people were interviewed. Table 2 shows the distribution at each site.

Future data collection will include return site visits to the schools to conduct follow-up interviews regarding the continued implementation of the graduation requirements. This effort will trace school organizational and staffing adjustments as well as follow students to find out how their perceptions of their schooling change as they approach graduation under the

Table 2:

Interviews Conducted At Each High School

	Medford	Redmond	Wolcott	Ashfield	Riverview
Administrators	3	3	4	2	4
Guidance Counselors	3	3	3	1	2
Department Heads*	5	8	8	13	15
Teachers*	6	9	6	13	12
Students*					
academic	3	3	-	3	3
general	3	4	3	3	3
vocational	3	3	3	3	3
below ave.	3	4	3	3	3

* In some cases group interviews were conducted with two to four interviewees.

new requirements. Researchers also will gather transcript data on these students (class of 1989) to compare protraits of their paths through high school with those of the previous cohort. These activities currently are scheduled for the summer of 1989.

Interview Data Results

The interviews in the five high schools covered a number of topics. Although the interviews themselves stressed an open-ended but structured format, there were seven general areas to be discussed with each person. These were: (1) effects on the drop-out rate; (2) effects on minorities and the foreign born; (3) the respondents' level of information about the new requirements and ways that information had flowed to them; (4) effects on specific departments; (5) effects on special programs; (6) the respondents' knowledge of and judgments about the Certificate of Merit option; and (7) their thoughts about how requirements might or might not affect students' aspirations.

Dropouts, Minorities and the Foreign Born

Two of these seven areas can be combined and discussed briefly: perceived effects of the new requirements on the drop-out rate and on minority and foreign born students. In these two areas, all interviewees in all five schools saw things quite similarly. While we probed these two topics carefully in the interviews, the general assessment was that the new requirements would have mixed effects in both areas. Some felt that the competency tests would be more likely to discourage more students from remaining in school than would the increased course requirements. Others remarked that the effect of the requirements would be no different on minority students than on other students since they represented the range of abilities just as any other groups.

Level of Information

The level of information that interviewees had about the new high school graduation requirements varied greatly depending on the specific high school where he or she worked or attended school. At the two extremes were Medford

and Wolcott. Generally, the people at Medford appeared to have much more information than those at Wolcott. Those at Medford seemed to have considerable, in depth, accurate information about the graduation requirements, in general, and the stipulations about the Certificate of Merit, in particular. For example, one administrator stated, "We received copies of everything--very thorough." This depth of information was reflected by nearly everyone interviewed in the school, including students in the general program of studies. While a few students reported not knowing what the requirements were, when compared with students from other schools, their information was remarkably high.

Wolcott High School stood in contrast with Medford's high level of information. Few faculty were aware of the changes, few appeared to have a need to know, and information that had been available to them early in the implementation process was apparently incorrect. The people there expressed their frustration:

> "Information hasn't flowed as smoothly as it might have--there is confusion about it even now." (administrator)
>
> "We received incorrect information that I disseminated, then that was superseded." (department head)
>
> "Teachers are confused." (teacher)
>
> "Teachers are the last people to learn about change; the newspaper knows more than we do." (teacher)

Responses from the ninth grade students also reflected a generalized lack of information about the requirements: "I didn't know we had to take any courses like that," and "I didn't know anything about it."

We attribute these stark differences to two major context characteristics of the schools. First, Wolcott is part of a large, complex urban school system with all the problems inherent in large bureaucracies. Systemwide

there seems to be a slow flow of information and this increases the likelihood of confusion and error as the information passes slowly through the layers of the system. So the size, complexity, and bureaucracy of the system compounded the difficulties of disseminating accurate information quickly and smoothly to Wolcott.

In contrast is Medford High School which serves a growing, suburban area with many resources (financial and otherwise), a history of being one step ahead of the state department of education, and a certain "savvy" about receiving and managing state information and regulations.

Second, the student populations served by these two schools represent near-polar extremes. Medford students were primed from elementary and junior high school and pressured in high school to consider college as the most appropriate post-secondary choice. While much of this pressure came from the students' homes, the school reinforced it in their emphasis on college preparatory courses and, specifically, those designated as satisfying the Certificate of Merit option. A large percentage of students took college preparatory courses (some inappropriately) and, in fact, went on to some form of post-secondary education. In contrast, students at Wolcott were described as the ones not talented enough to apply for and be admitted to the magnet high schools. The drop-out rate was estimated to be as high as 50 percent at Wolcott. Most students were enrolled in general courses, with few in college preparatory courses and even fewer qualifying for merit-level courses.

Our judgment was that the administrators, counselors, and teachers at Medford had a much greater "need to know" about the new requirements that did those at Wolcott. However, one wonders how many more college-bound or merit-qualified students might be found at Wolcott were they to be offered those opportunities.

In the other high schools, levels of information were fairly comparable, ranging from moderate to high despite their differences in environments and cultures. Ashfield High School was the smallest school in the study with just over 250 students in all four grades. The most significant characteristic of Ashfield was its extreme smallness and this characteristic was mentioned time and time again as an explanation for events, as a rationale for decisions, and, occasionally as an excuse to be used if the situation warranted.

Redmond, situated in suburban Washington, DC, was a small United Nations. Serving students from over 40 different countries and representing a vast array of languages, school staff were proud of and seemed to thrive on this diversity. Many held it up as a virtue. Defining themselves as having more difficult assignments than staff in other nearby high schools, teachers here believed that teaching at Redmond qualified one to teach anywhere.

From these schools came remarkably similar descriptions of their level of information about the new requirements. School administrators and counselors most frequently mentioned Board of Education memoranda as their sources. For department heads and teachers, information flowed through routine school channels: in-school administrative and department meetings and through county office supervisors. Students received information through counseling sessions in feeder schools, from current counselors, and during school assemblies.

The flow of information, in our judgment, seemed to be working well in all schools (with the exception of Wolcott High School), despite the short timeline (a matter of months) set for implementing the new set of requirements and identifying Certificate of Merit courses in every department in every school. It was our sense, however, that although the dissemination processes were in place, at times, the information was not clear.

In addition, the information available to people in the five high schools was interpreted to stress the academic departmental implications of the Certificate of Merit to the near-total exclusion of other departments such as art, music, and the CHIVE. This was apparent across all five schools. It seemed clear to us that the information regarding the Certificate was incomplete and required follow-up and technical assistance to ensure thorough implementation. For this reason we offer the following recommendation.

> We recommend that Certificate of Merit courses should be developed and offered in all subject areas--not just academic subjects--and that these courses be made available to all students--not just those enrolling in advanced courses.

Effects on Departments

Overall, the new graduation requirements affected five departments or areas directly: mathematics, science, foreign languages, fine arts (visual arts, music, dance, and theatre), and CHIVE (vocational education, industrial art, computer studies, technology education, and home economics). The two areas most affected in the first year of implementation were fine arts and CHIVE. In contrast to previous years, the new graduation requirements stipulated that all incoming students (as of the class of 1989) take one course in each of these areas.

In the five high schools, staff from the previously mentioned departments were aware of increased enrollments among ninth and tenth grade students due to the requirements. Many noted, however, that these increases were off-set by declines in enrollments among upper-level students; or they anticipated that this would be the trend. As students moved through their high school careers, those interviewed believed they would see less room for elective courses in their rosters and would no longer elect, for example, an advanced painting course, advanced electronics, or advanced tailoring. The prediction was that these declines would be off-set by more lower-level students

enrolling in introductory or survey courses (for example, a history of Western art course) to satisfy the new requirements. Thus, teachers projected a shift in course enrollments from more advanced courses to introductory ones.

Effects on the CHIVE departments seemed to depend on the entrepreneurial spirit of the department faculty and the support of the administration. For example, at Medford the business education department had received approval to allow students to count an introductory typing course as a prerequisite for computer courses. Requiring key-board skills for computer use also ensured continued high enrollments in the typing courses in this department. Moreover, because they became the department that controlled access to computers they obtained an advantage in capturing the college preparatory students. The success of this example suggests the following action should be considered.

> We recommend that all departments should examine their program and course offerings to insure that they are consistent with the full intent of the Maryland Commission of Secondary Education report recommendations and that students are fully aware of the content and purpose of these offerings.

The situation at Ashfield deserves special discussion here, as it seems typical of the constraints on small high schools across the state. The smallness of the high school clearly had great value for the people working and attending school there. They spoke of the sense of family at the school:

> "The closeness of students and staff--it's very informal. Sometimes we've made rules but nobody follows them. Because of our size, we don't need them--it's relaxed and comfortable." (administrator)

> "The closeness of the faculty is great here--it's a great opportunity to know each other professionally and socially. It's a pleasure to come to school every day. All the kids, the majority of their parents, went to school here." (teacher)

Yet, this smallness constrained the flexibility of the faculty and forced many teachers to teach out of their area (for no more than two periods a day), just to meet standard requirements. Although obvious to some extent at all the high schools in the study, the competition at Ashfield among elective courses and departments (fine arts and CHIVE) had become quite acute since the implementation of the new requirements. From our perspective, this was an unfortunate result of the decreased flexibility for choice in students' rosters and the stipulated requirements in fine arts and CHIVE.

Our judgment was that this particular aspect of the policy should be thought through carefully, especially for small high schools, since there is the potential to pit departments against one another in these settings and competition for scarce resources (in this case, students) could be fierce. This situation would destroy one of the central values of the small high school--its closeness and sense of family. Our concern for the particular school context prompted the following recommendation.

> MSDE should adjust its technical assistance and support of implementation to address local school context. They should make every effort to improve communications with locals and develop materials to assist that process.

Staff in the other three departments directly affected--mathematics, science, and foreign languages--also were anticipating adjustments over the next school year (1987-88). In some cases, they had begun to prepare for those adjustments. This was most clearly seen in the mathematics departments of the five schools and it can be attributed to the third year of mathematics

requirement.[3] The first class impacted by the new requirements is this year's sophomores. Next year they will be enrolling in many more mathematics classes than previously. Even in Riverview High School, where a third year of mathematics had been required by the county for a few years and the state requirement created no real need for additional adjustments, the mathematics faculty discussed adjustments. Specifically, they saw the need for a third year of general mathematics, and described their concerns for the already low-achieving students:

> "The new requirement will increase the frustration of the students who don't pass." (teacher)
>
> "I'm hearing a lot of students complaining that the third year is too difficult and not relevant for their future plan." (teacher)
>
> "Math teachers will need more inservice to help them cope with third year general students." (teacher)

These concerns for the third year of general mathematics were echoed at the other high schools. All were used to having the college preparatory students enroll in a third and even a fourth year of mathematics; for these students, no adjustments were anticipated. However, all schools had made adjustments or were anticipating adjustments to the roster, the curriculum, and to staffing to accommodate the increased need for third-year general level mathematics. In general, although the schools' staffs did see the need for

---

[3]The State Department of Education has created and initiated a new framework and a curriculum for mathematics including three years of differentiated general mathematics courses.

some shifts as a result of the mathematics requirements; most welcomed it. Even at Ashfield where size made such adjustments difficult, teachers believed that the additional year was very valuable, despite the roster problems it would create. The issues raised over the third year of mathematics generated the following recommendation.

> We recommend that the local high schools carefully examine all third year mathematics courses, particularly in terms of their appropriateness for non-college-bound students, and implement the state's three year differentiated mathematics curriculum.

Across all five high schools, the science and foreign language departments were relatively unaffected by the new requirements. Some of the teachers interviewed noted that there was a potential for some adjustments because of the Certificate of Merit option and its stipulation of additional coursework in science and foreign language. However, no one reported current effects. This they attributed to the fact that the same students who enrolled in honors or advanced placement courses were the ones who probably would opt for the Certificate of Merit. And they reasoned that they were already accommodating these students. Moreover, several reported that the Certificate was not a big incentive to students because it was targetting those already well-primed to take advanced courses, even though this was not the intent of the new bylaws. Thus in all five schools staff from these two departments noticed only ripples.

Effects on Special Programs

Across the five high schools, there was consensus that the new requirements could provide opportunities to both special and vocational students by requiring them to take courses they might not otherwise take.

Although the information level about the stipulations of the new requirements for special education students was generally quite low for teachers from other departments, there appeared to be some agreement that, except for these new elective opportunities, effects would be limited. At Medford, a counselor noted that the requirements would "encourage further exploration of various career areas." But others felt that the requirements might push more special education students into accepting a High School Certificate rather than encouraging them to strive to qualify for a regular diploma. Those interviewed felt that state mandated tests (also required for graduation) were much more of a problem for these students than the new course requirements. Through our observations it became apparent that the intent of the High School Certificate was unclear. Based on this we offer the following suggestion.

> We recommend that a clearer reiteration of the regulations governing the High School Certificate be given to all high school principals. These clarifications should underscore the Certificate's applicability only to identified handicapped students.

The problems anticipated for vocational students were seen as being somewhat greater, depending on whether a school had a half-day vocational program or whether students went to an entirely different school for vocational training. For vocational students enrolled in a half-day program (Redmond, Riverview, Ashfield, Wolcott), teachers expected that the requirements would be especially tough. The thrust of the requirements, they felt, was academic so vocational students might feel less and less "legitimate" in the regular high school. Also, with increased requirements, these students would have little or no room in their four-year rosters to fail a course. Moreover, with a heavy academic load and a heavy vocational load, space for electives had been pushed out. For those students considering

a three credit course at the end of the vocational track, the new requirements would force them to choose early so that they could fulfill all the course requirements before reaching that point in their schooling where this course would cause them to be out of the school for half a day. This fear was best summarized by a teacher from Medford who noted that, "vocational courses will get second class status." And a teacher at Redmond had a dire prediction, although incorrect in his assumption that vocational students are eligible for the High School Certificate:

> "Vocational students will be counselled into the High School Certificate and we will become a three-track school: College, General, and Vocational."

A handful of teachers expressed the view that the CHIVE requirement would strengthen vocational programs already housed in high schools. With the first taste of a practical art, this reasoning went, the student would become interested in the subject and there then might be greater potential for the student to stay with that interest. A second minority view was expressed at Wolcott where there were real concerns about vocational programs in comprehensive high schools. Teachers, afraid that vocational programs were being phased out of high schools altogether, were concerned for their jobs as well as for the options available to inner-city students. This was also noted at Redmond where one of the administrators felt that vocational programs were suffering already because of declining enrollments in high schools and because of block scheduling and the academic orientation of the whole reform movement. These findings prompted the following recommendation.

> We recommend a local investigation of the effects of the graduation requirements on vocational education centers. The focus of this investigation should be to ascertain how vocational education has been impacted, postively and negatively by the new graduation requirements. Furthermore, we recommend a re-examination of their curricular approaches in

> preparation of students for the technological world of tomorrow. Such an investigation should explore how, for example, math and science credits can be granted through a vocational program.

Our judgment about these concerns is that the local implementation of the new requirements towards academic students, to the near-exclusion of vocational or work-oriented students, is an issue that needs to be addressed. The issue touches at the very purposes of a comprehensive high school education. If the requirements are to have the broad impact intended by the state, local policy makers must pay more atttention to the role of preparation for the world of work in the total scheme of secondary education, and to think beyond the confines of existing structures (e.g., departments or programs) in building a delivery system that successfully meets those needs.

The Certificate of Merit Option

Generally, the Certificate of Merit option was viewed as not affecting the high schools very much. When effects were mentioned, those interviewed projected that enrollments might increase some in either science or foreign languages. However, these increases would be small because the Certificate appealed to honor students--those already enrolled in three years of science and advanced language. Thus, overall, staff in the high schools did not anticipate major effects from the Certificate. This is, indeed, probably true until such time as the schools change their narrow definition of which courses qualify for the Certificate.

At Wolcott, the Certificate had almost no visibility. In the words of faculty and administrators,

> "There are no effects. There is no Certificate here. We lose this area's best 40 percent to special schools." (administrator)

"We don't have the courses. We don't have the staff to teach them." (administrator)

"No one knows about the Certificate here." (department head)

"The Certificate doesn't meet the kids' immediate needs." (department head)

"I have no idea about the Certificate." (teacher)

The combination of the Wolcott staff's view of the student body and apparently inadequate information regarding any of the requirements, especially the Certificate of Merit, created a situation in which the Certificate option was barely present.

At Riverview, Redmond, and Ashfield, the Certificate was in place and serving the academically talented students exclusively. It was not apparent to us in either fine arts or CHIVE departments. Teachers seemed to assume that the Certificate would only be appropriate for the most advanced students in traditional academic-level classes. Thus limited effects were visible from this new state Certificate: the same students who enrolled in advanced courses generally (honors, gifted and talented, advanced placement) were electing the Certificate courses. The report from Ashfield:

"We get frustrated when kids take the easy way out. Kids who challenge themselves are involved in the Certificate." (teacher)

"The Certificate may possibly reward only students who are interested in mathematics and science." (teacher)

"The Certificate may encourage kids to take more mathematics and science, but it will probably have the most effect on advanced kids." (teacher)

And from Redmond:

"The Certificate is going to be just an extra accolade for the kid who was going to take accelerated courses anyway." (administrator)

"I don't see the Certificate as a terribly motivating kind of thing." (counselor)

"There is no impact from the Certificate because no one knows about it here. There's been no notice about it. I don't know which courses fit that category." (department head)

"The merit option may contribute to a polarization of the haves and have nots. It might promote elitism. People will begin to question the value of the regular diploma." (teacher)

At Riverview those interviewed responded similarly to those at Ashfield and Redmond, noting that the Certificate appeared to be attractive only to honors students and, because these represented such a small percentage of their total population, had no great effects on the school. In their words:

"It has not been a great incentive--only 25 percent of our students and these are all advanced placement kids." (counselor)

"It is a 'big deal' for overachievers--the AP kids will take to it." (teacher)

The picture was different at Medford where a great deal of emphasis was placed on college attendance, both in the school and at home. Students reported that they felt pressured into taking merit courses; one described how he had taken five merit courses and failed all five during the first marking period. Although we picked up concern about this apparent mis-advising of the students, the administration was clearly behind the Certificate. As they described it,

"I tell the guidance people to push but they back away." (administrator)

"Some teachers think some students shouldn't be in merit courses." (administrator)

"There are some kids signing up who shouldn't--their parents are pushing them." (counselor)

"There are more this year biting off more than they can chew." (counselor)

"Anyone who wants to go to college signs up for merit courses." (teacher)

"Kids see it as a way to get into the college-bound track." (teacher)

"Kids are adamant about the Certificate even if they aren't able." (teacher)

Thus, the pressures at Medford were for more and more students to sign up for merit courses, thereby ensuring virtual overlap between regular college preparatory courses and merit courses. In this scramble for grades and a place in the college track, merit options for fine arts and CHIVE were apparently forgotten.

Aspirations of Students

The aspirations of high school students can be inferred from responses to the general questions we posed to administrators, teachers, and students in the five high schools. We interpret one of the intents of the new requirements to encourage more students to become more involved in the more academically oriented aspects of high school life. That is, the requirements should push students to take more courses, hopefully more rigorous courses, to ensure their mastery of the skills necessary for effective functioning as a citizen in the state of Maryland. This, unfortunately, has been translated into a "more is better" kind of approach in the schools. While the original mandate called for enriching courses of all sorts, this intent has not yet been implemented in the schools. One administrator from Riverview expressed the same concern by noting that the requirements are good because they define more clearly what the expectations are for students, but bad because they don't address the quality of the courses taken. Based on these concerns we offer the following recommendation.

> Rather than focusing on just increasing the number of credits or the kinds of courses taken, we recommend that local high schools, supported by MSDE, undertake indepth examinations of school organization, course content, and instructional approaches as described by the full scope of the Maryland Commission on Secondary Education study (volumes 2-5).

We also assume that one intent of the regulations was to encourage more students to attend some form of post-secondary institution to build on skills and interests gained in high school. In particular, the regulations could target the quartile of students who typically do not attend two- or four-year colleges even though they are able to do so. This group is one we were especially interested in tracking.

Perceptions of the overall value of the new requirements varied from school to school. At Riverview, the staff we interviewed felt that they were a step in the right direction: they would stimulate and motivate students; they would cause students to pay more attention to their courses; and they would enable students to be well-versed in the basics. Student reaction at the school was much more mixed. The ninth graders we interviewed nearly all felt the requirements were bad: they would reduce the number of electives a student could take; they weren't practical; and they would be hard to fulfill in a vocational program.

Responses at Redmond were also generally positive. Here the potential that the requirements have to make students take school more seriously was stressed. Several teachers mentioned that now teachers could work with students to help them focus their energies. One underscored that the school might become more attractive to the more able student. Those who noted few changes mentioned that overall there would not be much change in programs or services, but that a few departments might be affected. Concerns were voiced here about foreign-born students and with ESOL students (their largest population) as being particularly at risk. This observation generated the following recommendation.

> We recommnd close scrutiny of the intended and unintended effects of the new requirements, especially to determine potential adverse effects on at-risk youth. Furthermore, local systems need to develop, with the assistance of MSDE, their own systems for service delivery (like appropriate assistance) to the at-risk population.

The portrait of perceived overall effects on students at Medford stood in contrast to Redmond. The concerns about aspirations, from what we could infer, were very different here. Because of the school's reputation for college preparatory work, increasing the motivation of a group of students was not a concern. Teachers described most students as well-motivated towards college. In fact, the Certificate of Merit had become nearly synonymons with college preparatory courses. As the teachers remarked,

> "Anyone who wants to got to college signs up for CM courses." (teacher)
>
> "Kids see it [CM] as a way to get into the college-bound track." (teacher)

Thus, increasing students' aspirations was not a problem at Medford. Quite the contrary, some teachers felt dismayed that any students at all were being pressured into advanced courses on the mistaken assumption that such courses were the only route into college. One teacher remarked that "more [students] this year are biting off more than they can chew." Two students we interviewed had enrolled in Merit courses only to fail several of them. Thus the merit option feature of the new requirements appeared to increase an already pressured academic environment at Medford.

At Wolcott, the picture was much less clear. Some administrators and teachers expressed the notion that the requirements carried higher expectations for students and that students would respond to those expectations by striving to do better in school. Others saw the requirements as confounding both staff and students--staff were described as frustrated;

students it was predicted would drop out in greater numbers. In terms of capturing student interest and holding it in the high school years, the requirements for Wolcott were too costly and too ambiguous to implement effectively. Caught between the pressures of increasing costs, declining enrollments, and staff shortages, the school could barely offer basic courses in each department.

At Ashfield, administrators and teachers expressed support for the idea of increasing requirements but noted how difficult scheduling was at their small school. More requirements made a difficult and precariously balanced situation even more difficult. In support of the requirements, teachers noted that,

> "It's a wise step for the Department of Education to realize that our students are often undereducated and to do something about it." (teacher)
>
> "I'm in favor of a good liberal arts education and I support broadening the curriculum." (teacher)
>
> "They can only help because kids need increased mathematics, fine arts is needed, and the kids need recognition through the Certificate of Merit--it's an avenue for positive self-concept." (teacher)

However, the smallness of the school made any roster and program adjustments needed to accommodate the new requirements extremely difficult; thus they were seen as a mixed blessing.

In sum, the overall perceptions about the new requirements from the five high schools is that they may affect student aspirations both in the short-run by keeping them in school and having them work harder and in the long-run by making them more well-rounded citizens. However, the effects are not entirely positive. The problems of staffing and scheduling make whatever gains occur problematic. So the assessment is mixed, at this stage of implementation.

Student Transcript Results

We are most interested in tracking the effects of the requirements over time, particularly as they affect student choice. It is crucial, then, that we have a clear profile of student characteristics and choice patterns for those whose high school careers occurred under other graduation requirements. This profile is the subject of this section of the paper. Its value is two-fold: it provides a description of one of the last group of students (class of 1986) to have gone through Maryland high schools without these new requirements; and it is a data file of descriptive information against which we will compare the high school careers and choice patterns of students governed by the new requirements.

Student transcript data were collected from 249 graduates from the class of 1986. These students were not affected by the new requirements. Only students who spent all four years in the school were selected. The intent was to collect as much information as possible from student transcript records in order to build a descriptive profile that documented the paths these students take during their high school careers.

The results of this analysis are presented as baseline data to be used as points of comparison with future classes (from 1989 on) who will be affected by the requirements. They are presented in three parts: background characteristics of the sample; course and credit histories as they relate to the new requirements; and the factors that are associated with the differences in these course and credit histories.

Background Characteristics

Table 3 provides an overview of the sample of 249 graduates included in the study. These data can be summarized by two main points. First, the sample appears to be quite representative of the larger population of Maryland

high school students: half are male, three-quarters are white, three-fifths are middle class, two-thirds live with both parents of origin, two-fifths are enrolled in an academic program, two-thirds have plans for further education, and their average SAT scores are nearly identical to statewide averages. The second point is that for the interval-level variables, there is a great deal of variation in behavior across the sample. For example, while five percent had perfect attendance in any given year, there were 42 percent who missed 10 or more days. Likewise, five percent of the students had GPAs above 3.5 and 28 percent had GPAs below 2.0.

Table 3:

Summary Statistics of Transcript Data Sample (N=249)

1. Gender
   - male: 54%
   - female: 46%

2. Race
   - White: 75%
   - Black: 19%
   - Hispanic: 2%
   - Asian: 2%
   - Indian: 2%

3. Socio-economic status
   - upper: 2%
   - upper middle: 16%
   - middle: 56%
   - lower middle: 11%
   - lower: 15%

4. Family situation
   student living with
   - (a) both natural parents: 64%
   - (b) single parent: 23%
   - (c) one step parent: 11%
   - (d) other than parents: 2%

5. Program of studies
   - academic: 41%
   - general: 27%
   - vocational: 27%
   - special education: 5%

6. School attendance

	mean	SD
9th	170 days	10.9
10th	170	9.3
11th	168	10.4
12th	168	10.1

7. Grade point average

	mean	SD
9th	2.39	0.77
10th	2.37	0.80
11th	2.33	0.77
12th	2.29	0.81

8. Post high school plans

4 year college	43%
2 year college	21%
work	21%
military	3%
vocational	4%
marriage	2%
undecided	4%
missing data	3%

9. School-related activities

activity	1 or more years	3 or more years
academic	41%	11%
athletic	61%	26%
service	39%	12%

10. SAT performance

mathematics	471
verbal	431

Course and Credit Histories

Course, credit histories and activities of this sample of 249 seniors from the class of 1986 are summarized in six tables. Table 4 displays the distribution of credits earned. Total credits earned range from a low[4] of 18.5 to a high of 28.5. The median for credits earned was 23.5. Two-thirds of the students earned between 21 and 25 credits.

[4] Nine students in the sample had transcripts with less than 20 credits. It is unclear whether these students graduated with less than 20 credits of if some credits were not recorded on the transcript (e.g. summer school courses).

Table 4:

Frequency Distribution of Credits Earned

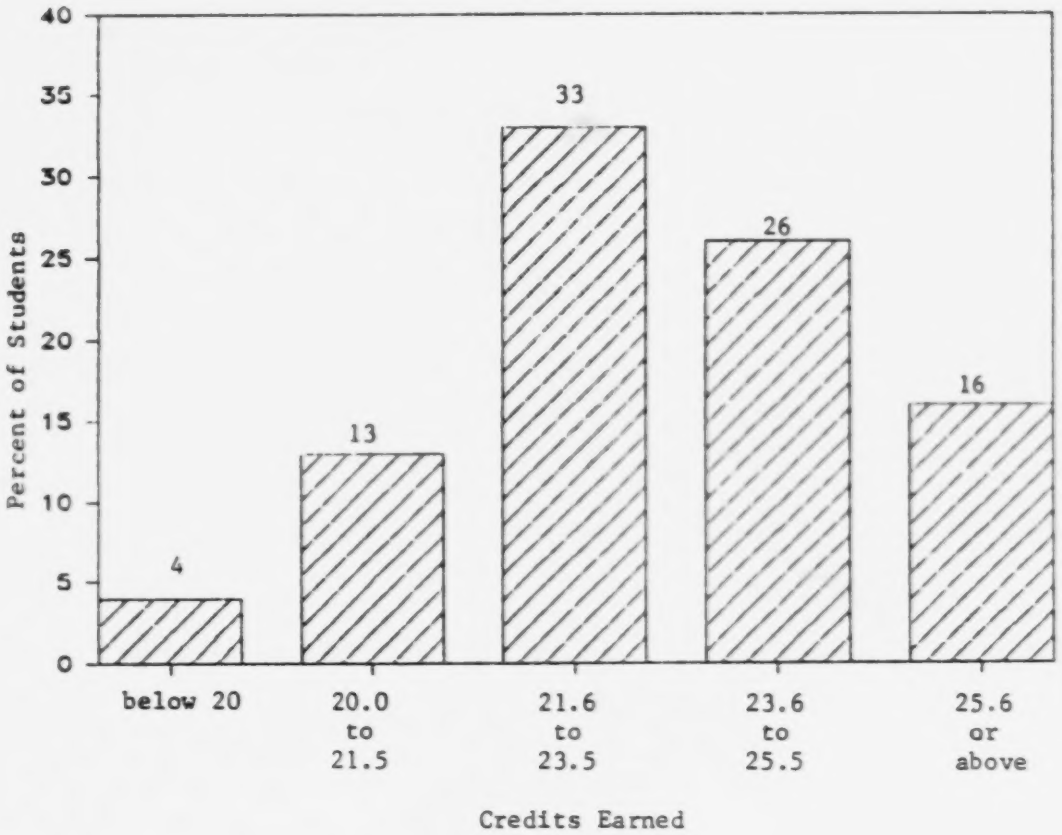


Table 5 breaks down the course credits by grade level. The average credits earned by 9th, 10th and 11th graders was approximately six. The number dropped to 5.5 for students in their last year. In recognition that sometimes seniors may be not terribly concerned about their academic credits (since they are soon to move on to new endeavors, either work or college), the new requirements stipulate that at least four credits must be taken during the senior year. With this in mind, a further analysis of the distribution of 12th grade credits indicates that only nine students, or four percent of this sample, would not meet the minimum qualifications of four credits. These figures suggest that the new policy will be affecting a small proportion of the student population.

Table 5

Average Credits Earned By Grade Level

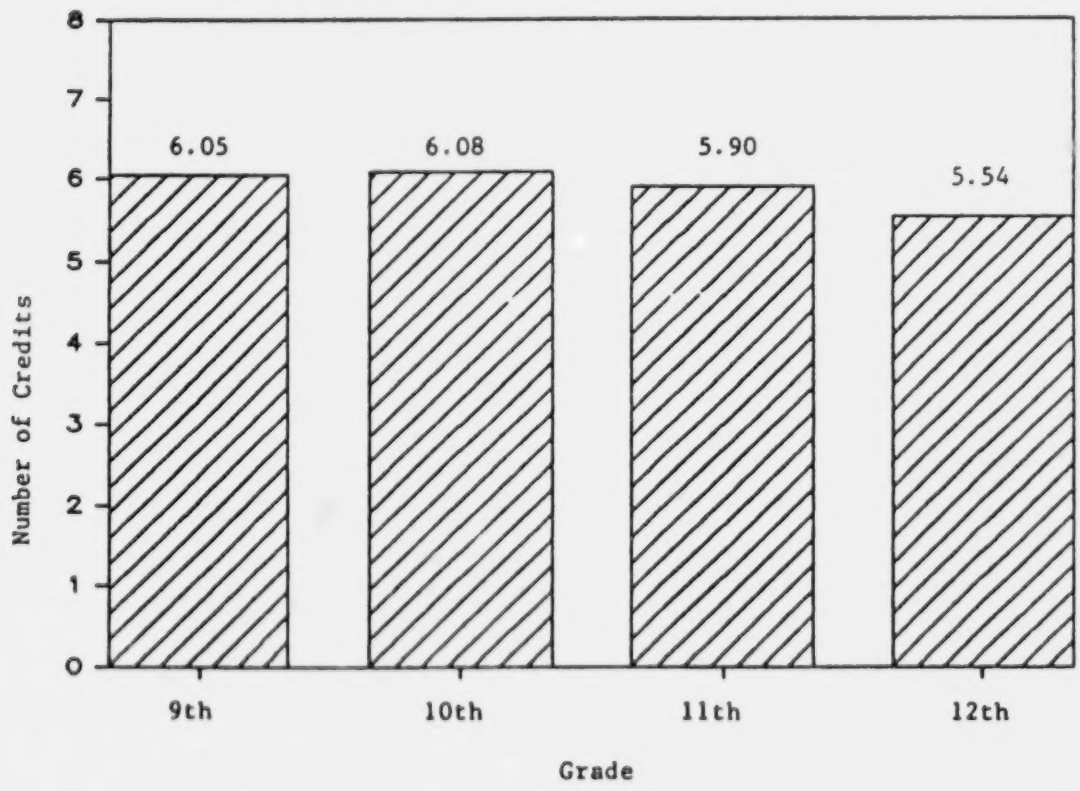
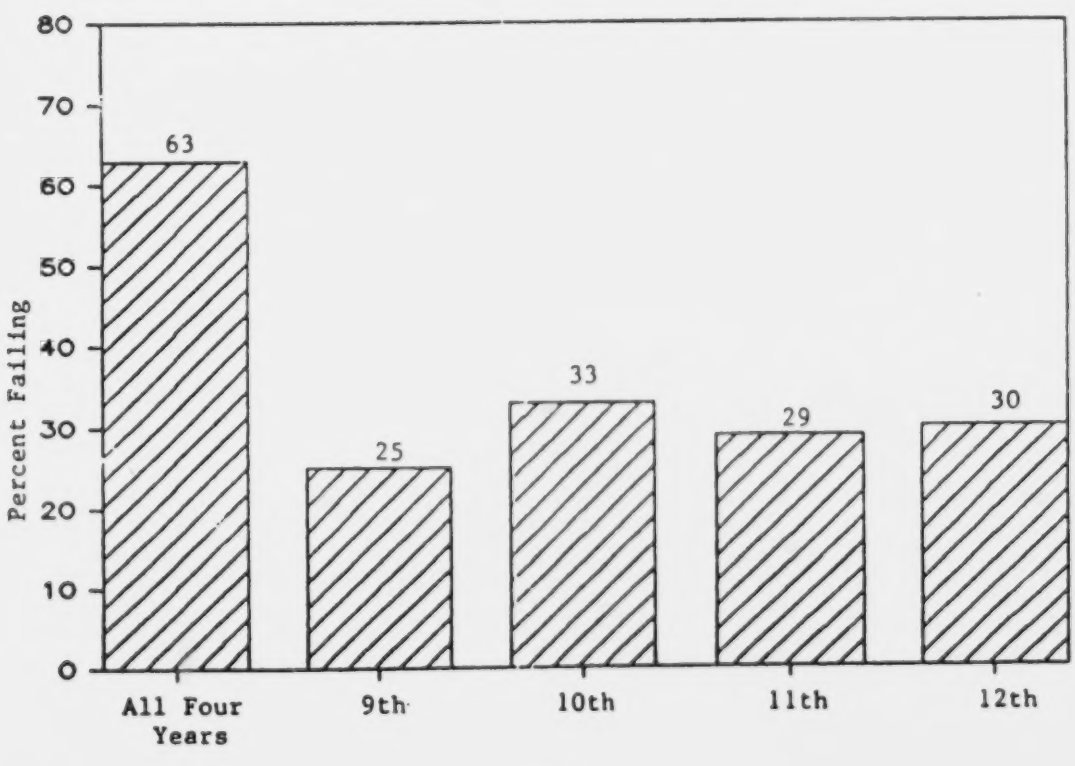


Table 6 documents the proportion of students who have failed at least one course during their high school careers. Statistics from the sample indicate that about two thirds of the students failed at least one course during their high school tenure. During any given year the proportion that failed at least one course was between one quarter and one third of the students. The introduction of the Certificate of Merit option as part of the new graduation requirements was intended to challenge students to enroll in more academically rigorous courses. Such an emphasis may also mean that the proportion of failures could increase. With the initiation of new requirements, the potential exists for a larger proportion to have more difficulty meeting those requirements.

TABLE 6

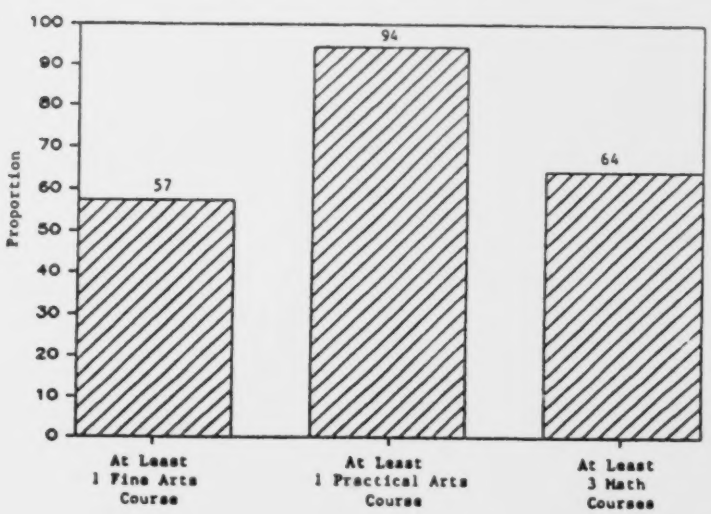
Proportion of Students Failing at Least One Course, by Grade Level



Another important goal of the new requirements is to encourage students to sample a broader range of courses and to strengthen exposure to mathematics courses. This is accomplished through the requirements including a fine arts credit, a credit in CHIVE, and increasing the mathematics requirement from two to three credits. Table 7 summarizes statistics showing the proportion of recent graduates who already were meeting these new requirements before they were implemented. The data suggest that almost half of the sample would not have taken a fine arts class unless mandated to do so. Nearly all the students were already taking a CHIVE course and the new requirement will probably have little impact on those enrollments. A further analysis of these courses indicate that most of the students (86 percent) would meet the requirement by enrolling in a business course. In almost two-thirds of the cases students were already taking a third year of mathematics. By increasing the mathematics requirement, and forcing the other one-third of the students to enroll in a third year of mathematics, enrollments in those third year classes should increase by nearly 50 percent.

Table 7 :

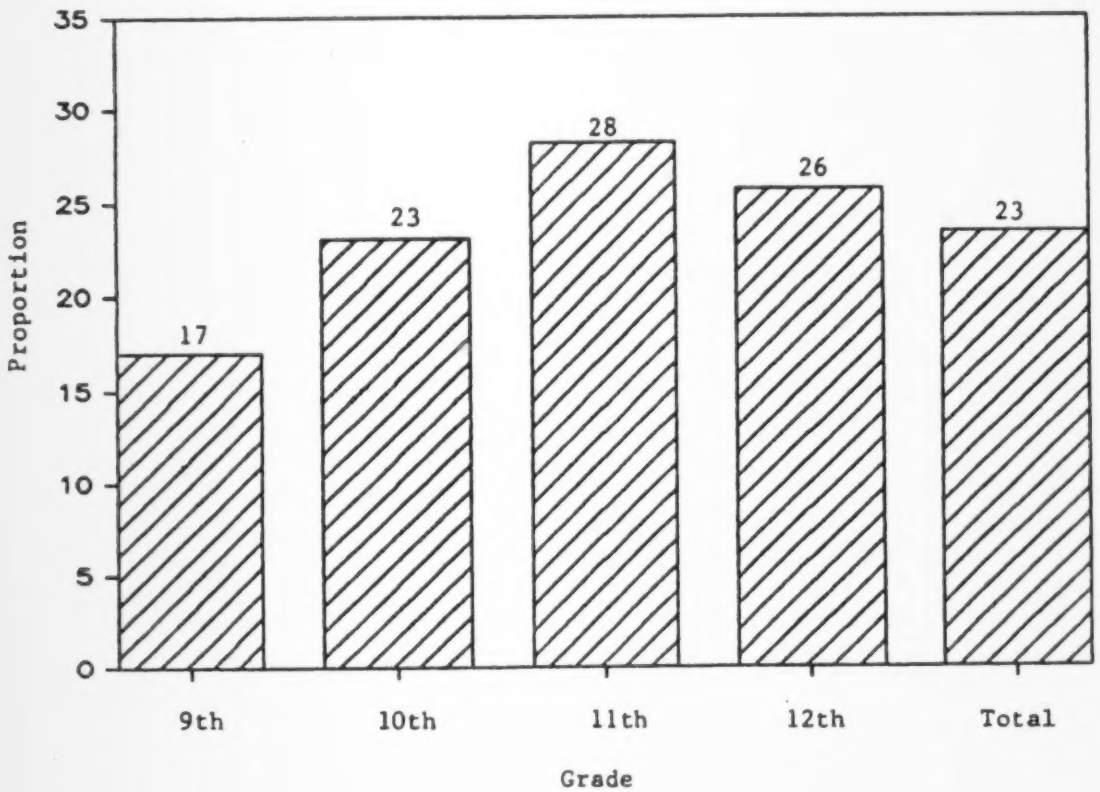
Proportion of Students Enrolled in Courses



The Certificate of Merit option was designed to encourage more students to enroll in more intellectually challenging courses. Table 8 offers some baseline data on the proportion of courses classified as advanced.[5] Just under a quarter of the potential course credits given to students were considered advanced. The courses offered during the ninth grade year were least likely to be advanced and the courses in the 11th grade were most likely to be advanced. An analysis was also conducted to see what proportion of this

Table 8:

Proportion of Courses Categorized as Advanced,
By Grade Level



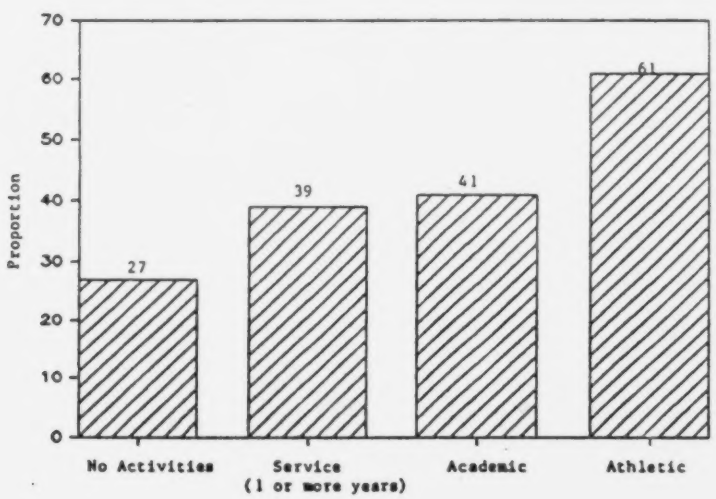
[5] See Appendix A for a complete discussion of course descriptions and the definition of advanced.

sample of 1986 graduates would have qualified for the Certificate of Merit. Based on the current criteria, only 8 percent of the sample would have been eligible. The implication from these numbers is that there is ample opportunity for students to avail themselves of enrollment in more challenging courses.

In addition to course and credit histories, information also was collected concerning participation in extracurricular activities. This information was collected because previous research indicates there is a positive association between participation in extra-curricular activities and overall school performance. Table 9 summarizes involvement of the sample of 249 graduates of 1986. Just over a quarter of the students were not involved in any school organized extracurricular activities. About equal proportions (40 percent) were involved for at least one year in both service and academic activities. The most popular extracurricular activity was athletic with 60 percent of the students involved at some stage during their high school career.

Table 9:

Student Extracurricular Activities*



* See Appendix A for a definition of each of the categories.

Factors associated with differences in credit and course histories

A major intent of the new graduation requirements is to encourage local school systems to rethink their entire instructional program with an eye to offering more challenging and diversified courses to the entire student population, not just those students planning to enroll in colleges and universities. To fully address the impact of the new graduation requirements, it is useful to document credit and course histories of students prior to the introduction of the new requirements. For this purpose, baseline transcript data were collected from approximately 50 students in each of the five high schools in the study. A comparison of these data with credit and course histories of students affected by the requirements then will enable us to have a better understanding of those effects.[6]

While graduation requirements may influence students' course taking patterns and credit histories, past research suggests other factors also play an important role. Specifically, five factors have been identified in the literature: race, gender, socio-economic status (SES), school attended and program of studies (vocational, general, academic).

An analysis of the baseline transcript data was conducted to determine the extent to which these five factors are related to the course taking patterns and credit histories of this sample of students. If the requirements are implemented as intended, it is hypothesized that there will be a diminution of effects of race, gender, socio-economic status, school attended, or program of studies.

---

[6]Given the naturalistic setting in which this research is being conducted, it will be difficult to attribute all the change to effective implmentation of the new bylaw. However, by carefully combining this knowledge with what will be learned from ongoing interviews with participants, increased confidence is gained about the veracity of the statistical relationships.

Table 10 reports the mean scores for credit and course histories broken down by available categories for the five factors.[7] Three separate course and credit variables are used in this analysis: the total number of credits received, the percent of courses passed, and the percent of advanced courses taken.

Table 10:
Mean Credit and Course Taking Patterns
by Race, Gender, SES, School and Program of Studies

Independent Variables		Total Credits Received	Percent of Courses Passed	Percent of Advanced Courses Taken
Race	(N)			
(1) Black	(46)	23.6	91.9%	13.2%
(2) White	(185)	23.6	94.4%	26.5%
Gender				
(1) Female	(117)	23.8	94.4%	22.5%
(2) Male	(131)	23.4	92.9%	23.8%
SES				
(1) High	(35)	24.7	96.7%	42.6%
(2) Middle	(116)	23.7	94.4%	27.2%
(3) Low	(54)	23.0	92.9%	8.6%
School				
(1) School A	(53)	23.2	95.1%	26.6%
(2) School B	(48)	24.4	90.7%	28.0%
(3) School C	(49)	22.3	93.4%	21.8%
(4) School D	(54)	25.4	95.4%	37.7%
(5) School E	(45)	22.5	93.3%	5.0%
Program of Studies				
(1) Academic	(73)	24.8	95.7%	46.2%
(2) General	(47)	22.2	91.3%	11.6%
(3) Vocational	(48)	23.6	94.3%	2.8%
Grand mean	(249)	23.6	93.6%	23.3%
Standard deviation		2.11	7.6%	22.3%

[7] It was necessary either to eliminate or combine some subgroups for these factors since many of the subgroups did not have large enough proportional representation. For the race variable, only the white and black subsamples were compared. The SES variable required collapsing the two highest categories (upper and upper middle class) to form a single category. The same was done with the two lowest. Finally, only three programs of study had subsamples large enough for comparison purposes--academic, general and vocational.

The mean scores in the first column represent the total number of credits received. There was no difference in the number of credits received by black or white students. There is almost no difference between females and males. There is a small difference by SES. On average, high SES students receive just over one and half more credits than do low SES students. School attended and program of studies are more strongly related to credits received. There is approximately a three credit difference between the highest and lowest category for both of these factors.

Large differences do not exist between subgroups for the percent of courses passed. The difference between white and black students is only 2.5 percent. The difference between females and males is 1.5 percent. The difference between high and low SES students is also quite small, only 3.8 percent. Pass rates across the five schools are also very similar with only 2.9 percentage points deviation from the grand mean. Finally, the trend is also the same for program of studies; there is only a 4.4 percent difference between pass rates in the program with the highest pass rate (academic) and the lowest (general).

The most striking differences occur in the percent of advanced courses taken. White students enroll in twice as many advanced courses as blacks. Males enroll in slightly more advanced courses than females. High SES students are five times as likely as low SES students to take advanced courses. There are also striking differences among schools in advanced course enrollments. In one school, over one third of the course enrollments are in advanced courses while on the other extreme only one out of every 20 enrollments in another school is for an advanced course. These large differences are also seen in the program of studies variable. Nearly half of the academic courses are advanced, while almost none of the vocational and very few of the general courses are defined as advanced.

The means, as displayed in Table 10, offer interesting insights into the relationship between race, gender, socio-economic status, school attended, and program of studies and student credit or course taking patterns. The findings suggest that the five factors are only moderately associated or not associated at all with the number of credits received or percent of courses passed. There is a much stronger association of these factors with percent of advanced courses taken.

The clear message, however, is that it matters a great deal in which program of studies a student is enrolled. For example, students enrolled in an academic program are four times as likely to be in advanced courses than students who are enrolled in vocational courses. Thus, the transcript data indicate that there is ample room for changes in the course selection patterns of students. While the intent of the Certificate of Merit option is to promote enrollment by all students in advanced courses, the interview data suggest that this may not be happening. A full answer will only be obtained by comparing transcript data from the baseline sample with transcript data from students who are fully impacted by the new requirements (i.e., the class of 1989 or beyond).

Conclusions

While this study is only in its beginning stages, we feel there are three concluding statements that we can make. The first discusses findings from the initial quantitative analyses; the other two address policy formulation and implementation issues. The Coleman Report (1966) strongly suggested that the particular school students attended made little difference in their overall performance. More important than school, according to these analyses, were family background and socio-economic status. More recent research has

challenged this conclusion. Under the banner of "effective schools research", the findings suggest that alterable school conditions have an impact on student learning (Edmonds, 1979; Clark, Lotto, & McCarthy, 1980).

An important finding from the quantitative transcript analysis is that program of studies has a significant impact on student choices. The research literature documents that these choices are in turn linked to achievement, self-concept and longer term life-course decisions (Rosenbaum, 1976; Oakes, 1985). Our analysis sorted students into three broad programs: academic, general, and vocational. These clearly correspond to traditional "tracks" where students are placed (and place themselves) early on into fairly rigid courses of action that influence major decisions in their lives. Our analysis suggests that there is ample scope for Maryland's educators to alter the instructional program in the state's high schools to expand the opportunities for the entire school population, a primary purpose of the new graduation requirements.

The two policy conclusions address the efficacy of state-level initiatives in reforming secondary education. First, our interview data suggest quite strongly that these state initiatives have had limited impact on local schools. This was the second year of implementation of the new policy and we anticipated strong responses--especially from teachers--about how things in the schools were changing as a result of the requirement. Overall however, we must characterize the interviewees' view of the impact as low to moderate thus far. Most just did not see many changes in their school lives. This finding implies that undertaking a major reform of a whole sector of public education like these requirements are doing is a slow and cumbersome process; perhaps large impacts will be visible only after several years.

The second policy conclusion has to do with whether state-level reforms are sensitive to local context: the individual characteristics and idiosyncracies of local schools. The burdensome and troubling competition documented among departments in the smallest high school in the sample is one illustration of a conflict that was not anticipated in the policy making process. This finding implies a need for policy makers to re-examine policy formulation processes to incorporate more collaborative opportunities in state policy decision-making for local contextual input.

In conclusion we offer a final recommendation.

> We recommend the continuation of the investigation of the effects of the high school reforms. This study should include a longitudinal component to discover more precisely the long-term effects of the Maryland graduation requirements. It should also pay particular attention to implementation of other aspects of the Maryland Commission of Secondary Education recommendations which have been incorporated into state bylaws.

References

Bickel, R. (1986). Consequences of the extended school day and upgraded curriculum. Planning and Changing 17(1) 31-44.

Clark, D. L., Lotto, L. S., & McCarthy, M. M. (1980). Factors associated with success in urban elementary schools. Phi Delta Kappan, 61(7), 467-470.

Corbett, H. D., Firestone, W. A. & Rossman, G. B. (in press). Resistance to planned change and the 'sacred' in school cultures. Educational Administration Quarterly.

Cross, K. P. (1987). The adventures of education in Wonderland: Implementing education reform. Phi Delta Kappan. 68(7) 496-502.

Edmonds, R. (1979). Effective schools for the urban poor. Educational Leadership, 37(1), 15-24.

Elmore, R. (1980). Backward mapping: Implementation research and policy decisions. Political Science Quarterly. 94 601-616.

Glatthorn, A. A. (1986). What about youth at risk? In Walberg, H.J. & Keefe, J.W. (Eds.) Rethinking reform: The principal's dilemma. Reston, VA: National Association of Secondary School Principals.

Hamilton, S. F. (1986). Raising standards and reducing dropout rates. Teachers College Record. 87(3) 410-429.

McDill, E. L., Natriello, G. & Pallas A. (1986). The high costs of high standards: School reform and dropouts. Paper presented at the annual meetings of the American Educational Research Association. San Francisco, CA.

Maryland State Board of Education (1985). Graduation requirements for public high schools in Maryland. Title 13A, Subtitle 03, Chapter 02.

Metz, M. H. (1986). Different by design. New York: Routledge and Kagen Paul.

Oakes, J. (1985). Keeping Track How Schools Structure Inequality. New Haven, CT: Yale University Press.

Resnick, Daniel P. & Resnick, Lauren (1985). Standards, curriculum, and performance: A historical and comparative perspective. Educational Researcher, 14(4) 5-20.

Rosenbaum, J. E. (1976). Making Inequality the Hidden Curriculum of High School Tracking. New York, NY: Johr Wiley & Sons, Inc.

Rossman, G. B., Corbett, H.D., & Dawson, J.A. (1986). Intentions and impacts: A comparison of sources of influence on local school systems. Urban Education, 21(1) 86-106.

Rossman, G. B., Corbett, H.D. & Firestone, W. A. (in press). Culture, Change and Effective: A Study of Three High Schools. Albany, NY: SUNY Press.

Rossman, G. B. & Wilson, B. L. (1985). Numbers and words: Combining quantitative and qualitative data in a single large scale evaluation study. Evaluation Review, 9(5) 627-644.

Serow, R. C. (1986). Credentialism and academic standards: the evolution of high school graduation requirements. Issues in Education, IV(1) 19-41.

Toch, Thomas (1984). The dark side of the excellence movement. Phi Delta Kappan, 66(3) 173-176.

Wise, A. E. (1979). Legislated learning: The bureaucratization of the American classroom. Berkeley, PA: Univeristy of California Press.

Appendix A: Coding of Transcript Data

In the analysis of the transcript data every nth student was randomly sampled to obtain a pool of 50 students per high school. The students had to have been enrolled in the high school all four years to qualify. A Maryland state department of education (MSDE) employee and a school guidance counselor pulled the students' permanent record files in the sample before the team of coders arrived at each site.

At each site a group of 5 to 7 people including MSDE staff, RBS staff and guidance personnel coded data from the students' records. The student records coding sheet was divided into two sections. Part A contained information on the students' race, gender, attendance, coursework, competency test results, awards and co-curricular activities. Part B collected data on the students' family situation, socio-economic status, parents' occupations, post high school plans, cumulative GPA, class rank, and program of studies.

The information on Part B was usually completed by a guidance counselor who was familiar with the student's background since some of the information had not been systematically collected by the schools. For example, often the counselors knew the students socio-economic status or family situation from personal contact with the student. The guidance counselor also coded the students' program of studies since he or she was most familiar with the type of courses the student had taken and could best judge if the student was in an academic, general, vocational or special education program.

The data collection on Part A was divided into various tasks among the group of coders. Usually three to five individuals coded race, gender, attendance, and coursework which included the course title, the final

grade received and the number of credits earned for all courses taken from 9th to 12th grade. They also coded information on the students competancy test results which included state functional tests, CAT scores, SAT scores, and PSAT scores.

Another coder then coded the course descriptors/groupings for all the students' courses. The course descriptors were as follows: (1) for advanced placement or gifted classes, (2) for advanced courses or honors courses that would qualify as certificate of merit courses under the new requirements, such as any mathematics course at or beyond the level of Algebra I and any foreign language course at or beyond the second year (i.e., French II, French III, etc.), (3) for courses that were general level, (4) for vocational or CHIVE courses or courses that would count as CHIVE under the new requirements, (5) was for remedial courses, and (6) for special education courses. These data were coded by the same two individuals at each site so that they would be consistent across all sites. The coders used the course title or information from the school handbook or guidance counselor to determine the level of each course.

Another coder handled gathering data on student activities and awards. This individual used information on the student record cards and also in the school yearbook. Both the type of activity and the number of years of participation were recorded. For the final analysis the activities were broken down into three categories: (1) academic which included band, language clubs, department clubs, newspaper, choir, drama and dance; (2) athletic which included sports teams, team managers and scorekeepers, cheerleaders and pep squads; and (3) service which included yearbook, student government, community service and scouting.

The awards were divided into four types: local academic, local non-academic, national academic and national non-academic. These were coded according to number of each type of award a student received.

The information gathered at each site was then translated into a form that could be easily entered into the computer for analysis.

APPENDIX B
PROPOSED RESEARCH DESIGN FOR FUTURE WORK

Design Features

- mixed methods: qualitative (interviewing) and quantitative (student records)
- longitudinal data collection
- cohort study
- multi-person data collection teams
- collaborative design and dissemination strategies

I. PHASE 1

A. FALL 1986/WINTER/SPRING 1987

1. negotiate sites
2. prepare instrumentation
3. conduct site visits to five high schools
   a. interviewing of administrators, counselors, teachers, students
   b. student records data collection
4. data analyses and summaries
5. MSDE report writing and AERA paper writing

II. PHASE II

A. SUMMER/FALL 1987

1. develop conceptual frameworks
   a. organization level: organizational ecology/resource dependence
   b. individual (student) level: tracking/social stratification
2. refine research design
   a. revise interview protocals
   b. proposal to MSDE
   c. write research articles

B. WINTER 1988

1. Fieldwork in 5 high school sites
   a. 1-day site visits, (February 1988)
      i. interviewing with administrators, counselors, teachers, and students
         - especially important to identify and flag the eleventh graders to be followed
         - staff: 4 person RBS team

ii. document data collection
- randomly select 100 students from Class of 1989 to follow (assume 50% attrition)
- staff: 5-person MSDE/RBS team

C. WINTER/SPRING/SUMMER 1988

1. clean up, summarize data

2. learn Ethnograph (qualitative data manager)

3. perform qualitative and quantitative data analyses

4. write reports and articles

III. PHASE III

A. SPRING 1989

1. Fieldwork to 5 high school sites

a. 1-day site visits, 3 scheduled in one week, 2 in another

i. interviewing with administrators, counselors, teachers, and students

- especially important to be sure same students [seniors] are interviewed and drop-outs, move-outs are captured, and identifying students at risk for graduation because of new requirements.

- staff: 4 person RBS team

ii. document data collection

- using student ID numbers to identify same student sample, collect this year's data from student records

- staff: 5 person MSDE/RBS team

B. WINTER/SPRING/SUMMER 1989

1. clean up, summarize data
2. perform qualitative and quantitative data analyses
3. write reports papers

IV. PHASE IV

A. FALL 1989/WINTER/SPRING 1990

1. clean up, summarize data
2. perform qualitative and quantitative data analyses

3. write reports

4. Fieldwork - final round
   a. 1-day site visits to 5 high schools
   b. interviewing with administrators, counselors, and teacher's
   c. final document data collection, especially noting post-high school plans and identifying students at risk because of new requirements
      i. staff: 2-person RBS team
                3-person MSDE/RBS team

B. SUMMER 1990

1. final report writing
   a. to MSDE
   b. to OERI
   c. articles and book